

EXHIBIT 12

W. R. Grace

Projected Liabilities for Asbestos Personal Injury Claims

As of April 2001

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Legal Analysis Systems

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Executive Summary

Purpose and Approach

This report summarizes results of analyses to estimate the liability of W. R. Grace (“Grace”) for asbestos personal injury claims that had been filed and were unresolved (“pending claims”) and claims that would be filed in the future (“future claims”) as of the date of Grace’s bankruptcy petition, April 2, 2001.

Source of Grace’s Liability

Grace is an unusual asbestos defendant. Grace was both a miner and manufacturer with a broad array of over 200 asbestos-containing products that were sold directly to the public and used in many different industries. From 1923 the Zonolite Company, which Grace acquired in 1963, mined, processed and sold vermiculite, an ore that was contaminated with tremolite, a particularly dangerous amphibole form of asbestos. Vermiculite dust is primarily responsible for the widely publicized health problems in Libby Montana. Grace also used chrysotile, another form of asbestos, in products that it manufactured and sold. Grace continued to mine vermiculite until the 1990s, selling asbestos containing fibers and commercial and consumer products for years after other major companies stopped such sales. Despite its large numbers of asbestos products and its sales of asbestos containing fibers and products in eight decades, Grace arrived late as a primary asbestos defendant before quickly becoming one of the greatest current targets of litigation by the time of its bankruptcy petition.

Data Sources

In analyzing and forecasting Grace’s asbestos liabilities we use a 2002 Grace claims database. We also consider and draw upon the experiences of other asbestos defendants who have continued to receive and settle asbestos claims during the six years since Grace entered bankruptcy. We can better understand what would have been Grace’s asbestos liability at and after its petition date by examining what has happened with other defendants in these last six years. Our forecasts also consider effects of recent and foreseeable continuing changes in the asbestos litigation environment.

Accepted Method for Estimating Asbestos Liability

We use standard forecasting methods that have been regularly accepted by courts, asbestos trusts and businesses for establishing asbestos liabilities. Asbestos liability is estimated as the product of three factors: (1) the number of claims, (2) the fraction of claims that get paid and (3) the paid values of those claims.

Concerning (1), the *number of pending claims* is generally known or can be derived from available data. To forecast the *number of future claims*, we use standard forecasting methods that rely upon proven epidemiology, Grace’s own trends in claim filings, its levels of past claim filings, and information on trends and levels of filings against other asbestos defendants before and during the six years that Grace has been in bankruptcy.

Concerning (2), the *fraction of claims* paid by Grace, we first analyzed at, but did not adopt,

developments that have occurred since the date for which forecasts are made.

- The forecasts reflect the epidemiology of asbestos-related diseases, both past trends as well as expected future trends in the incidence of asbestos-related disease, past trends and expected future trends in filings of claims for those diseases, and both past and expected future trends in the amounts paid to indemnify those claimants.
- The forecasts value asbestos claims as they have been valued in reality by defendants, plaintiffs and courts as shown by trial judgments, if any, and settlements that reflect the business judgment of all parties as to the likelihood that a plaintiff could obtain a judgment, anticipated indemnity payments and litigation costs, the parties' risk preferences and assessments of the time value of money. These forecasts avoid and attempt to adjust for artificial effects of matters such as deadlines, bar-dates, stays or moratoria on claims filings and resolutions each of which affect litigation in ways that do not occur and would not recur in the ordinary tort litigation of the defendant's asbestos law suits.
- The forecasts attempt to predict the future behavior of litigants: filing behavior among victims of asbestos disease and their lawyers; how defendants, plaintiffs and courts will value and resolve claims in the future. Because these are forecasts of objective future events, they cannot be based on the experts' or their clients' subjective, personal views about which claims should or should not be paid or how much a plaintiff deserves to be paid. Rather the forecasts are based on actual past behavior of plaintiffs and law firms in filing claims and on how defendants, plaintiffs and courts have actually valued and resolved the asbestos claims.

Courts, litigants, businesses, trusts and others rely upon estimations of asbestos liabilities. Better forecasts, those that use the sources listed above applying methods that have been tested and found to be reliable, have become important bases for decisions involving tens of billions of dollars.

Forecasts in this report have all of these features of previous forecasts that have been accepted and found credible by trusts, courts and other entities with incentives to determine and rely upon the best possible estimates of asbestos liability.

4.2. Standard Methods for Forecasting Asbestos Liability

To establish an aggregate value of pending and future asbestos bodily injury creditors, bankruptcy estimation looks at how a debtor would continue to receive and resolve claims within the U. S. court systems instead of within the protection of Chapter 11. Standard methods for estimating this aggregate liability start by examining and extrapolating from a debtor company's prior history in asbestos litigation. Some experts characterize this as estimation based on the proposition that "past is prologue" for future liabilities.

By the time of its bankruptcy petition, Grace had already received 328,658 and evaluated and resolved 193,468 asbestos injury claims within the legal processes that provide the context for now estimating its aggregate current and future asbestos liability. Grace's historic data is particularly important in showing how the company had itself valued asbestos claims in the past and how its values have been changing and could be expected to continue to change further over time. Where, as here, Grace has placed values on 157,084 settled claims (i.e., those claims that were resolved by payment of money to the claimant), we have enormous data on how it valued asbestos claims up to the time of its bankruptcy petition.

In that process, Grace had every interest in evaluating claims with the most accurate and realistic basis it could adopt. Grace and all asbestos defendants (indeed businesses who are defendants in any litigation) address and resolve the asbestos suits brought against them as business judgments, just as plaintiffs and their lawyers do on the other side.⁵ In deciding to settle, defendants look to

the risks and likely amounts that they would have to pay later to resolve claims. They settle to avoid greater future costs—including the costs of paying judgments based on adverse verdicts they might suffer. Like most defendants, Grace sometimes found it advantageous to resolve claims in groups, rather than individually, and normally found it advantageous to resolve claims through settlements, rather than trials, because both decisions lowered its resolution costs (as shown clearly in our analysis of Grace's data at Section 4.3.2.1 below).⁶

The result is that most asbestos claims against Grace were resolved without making a final determination of liability in those claims after a full trial and a jury verdict. Specifically, according to its database and the Snyder expert report (Attachment 2), Grace resolved 193,468 asbestos bodily injury claims prior to its bankruptcy, but only 78 claims were tried to verdict and perhaps another 1,543 were resolved by summary judgment entered for one side or the other.⁷ Accordingly, almost all claims were resolved by negotiated agreements between Grace and plaintiffs.

In this process, Grace was not helpless. Grace refused to enter into large-scale, inventory settlements that were not in its interest.⁸ Grace closed many claims without payment, presumably

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5. In his February 22, 2007 deposition in this case, Jay Hughes, Grace's lawyer who oversaw its asbestos litigation, described Grace's approach to defending that litigation:

A: First of all, you have to understand it's all market driven. I mean we're going to get out of the case based on the amount on money that we can. So it was an economically-driven decision." (February 22, 2007 Deposition of Jay Hughes, p. 96).

A: We were trying to get the cases at the cheapest possible amount? ["?" in transcript]

Q: That was true in all of your dealing with W. R. Grace, you were trying to resolve the cases for the cheapest amount that you could, correct?

A: Yes.

Q: And you were successful in doing that in your own view, correct?

A: Generally. (Ibid, p. 254).

6. Mr. Hughes described Grace's asbestos litigation strategy: "the management of the asbestos litigation involves the balancing of large-scale settlements with the advantages and disadvantages of a trial settlement/litigation strategy." Ibid.

Mr. Hughes "believed it to be in Grace's interest" to enter into inventory settlement (Ibid, pp. 85-85).

Mr. Hughes lists some ways in which inventory settlements benefited Grace in his February 2, 1999 memorandum to his superior, Bob Beber:

"Such a comparison shows modest savings when inventory settlements are employed to resolve these claims.

"Inventory settlements, however, also reduce outside defense costs and significantly reduce the risk of adverse verdicts.

"Adverse verdicts not only result in an immediate cash requirement far in excess of any reserved amount or anticipated settlement, but tend to adversely affect future settlement values in that jurisdiction."

Ibid, pp. 127-133, Exhibit 113.

7. Some of these cases with verdicts may have been on appeal or might not yet have reached final judgments at the time of Grace's petition.

8. When it could not reach settlements at terms that it found acceptable Grace was prepared to and did go to trial (Ibid, p. 254).

because it believed that the claimants had inadequate evidence of an asbestos-related disease, could not establish a Grace asbestos exposure, or that Grace had a legal defense that would keep a case from ever reaching a jury (Section 4.3.2). In addition, Grace let thousands of claims languish for years without any resolution until they were apparently abandoned (Section 6.1.3). When it did choose to settle, Grace worked to do so under favorable terms. Grace frequently chose the timing of settlements, settling “tens of thousands of cases” early before they had trial dates, because “asbestos claims have little settlement value until a trial date is scheduled.”⁹ Grace also reached an unusual arrangement to settle cases directly with a lawyer who “originated” many of Grace’s mesothelioma claims, settling at lower values than those cases would have received after referral to lawyers who would actually prepare and, if necessary, try those cases.¹⁰ Importantly, Grace paid more or less in settlement depending upon its perception of the strength of liability claims, just as it paid more or less depending upon the strength of injury and damage claims. Mr. Hughes testified that (1) the likelihood that a claimant would show liability, (2) the potential size of a verdict and (3) the impact of large verdicts on its ability to settle later cases were all among a number of issues that determined the amount that Grace would pay in settlement and, indeed, whether it would pay at all (*Ibid*, p. 97, p. 272, p. 133), along with such other matters as the strength of the medical evidence, the availability of legal defenses, a case’s “jury appeal,” and other factors.

As is true of virtually all tort settlements, in its settlements Grace would have rarely if ever acknowledged liability in a settlement or even necessarily concluded that in its perfect world as designed by asbestos defendants it should have to pay at all. It is also true that plaintiffs would seldom have accepted a settlement with Grace as representing the full measure of their view of Grace’s “true” and “just” liability for the plaintiff’s damages. The tort system for asbestos cases has advantages and disadvantages for both sides. But both sides accepted settlements as a compromise that eliminated their risks and their continuing litigation costs within the actual tort system, not an idealized system that would have been preferred by one side or the other. Grace settled claims because it recognized the risks of those claims: some probability that it would be found liable for an amount greater--usually far greater--than what it had to pay in settlement.¹¹ The record is clear that Grace was able to settle claims, including the most serious, for fractions of verdicts in similar cases (Section 4.3.2.1). Plaintiffs, for their part, accepted less to get faster payment and to eliminate their own risks, which included the risk of receiving nothing.

To determine the amounts that it would pay for settlements, Grace looked to the amounts it had paid in the past, its historic settlements and judgments.¹² Standard asbestos liability estimation methods use an asbestos defendant’s actual past payments in precisely the same way--here estimating how Grace would have fared in further tort litigation had it not entered bankruptcy by

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- 9. *Ibid*, pp. 104-105; Hughes Deposition Exhibit 152, Jay Hughes memorandum to Paul Norris, president and CEO of Grace, Bates 109-0152.
 - 10. Q: So you established a course of dealing with him in settling mesothelioma claims?
A: Yeah, I established a relationship with Roger, and we settled some cases directly.“
Ibid, p. 255
 - 11. This recognition was key to Grace’s attempts to achieve inventory settlements with law firms, which Grace pursued in part to avoid the risks that some of the clients of the law firm who were subject to the inventory settlements might instead take their cases to trial and obtain verdicts adverse to Grace. *Ibid*, pp. 130-131.
 - 12. Grace’s past settlements “gave us insight into what plaintiffs would be willing to accept” (*Ibid* pp. 97-98). But as plaintiffs’ lawyers increased their settlement demands, as they did for mesothelioma in 2000 and 2001, Grace had to increase the amounts of its settlements. (*Ibid*, pp. 269-270).

Table 3: Numbers of Pending Claims, By Disease and Liquidation Status

Description	Number of Pending Claims					
	Meso	Lung	OthCan	Nonmal	Unspec	Total
Number Liquidated	139	466	215	17,700	0	18,520
Number Not Liquidated	1,406	1,931	477	31,222	81,634	116,670
Total Pending	1,545	2,397	692	48,922	81,634	135,190

Note: Nonmalignant claims include claims classified as “asbestos-related” by Grace.

The various discovery and proof of claim processes in this case show how modestly estimation is affected by the question: how many pending claims have been settled but not paid pre-petition? Although Grace’s historic database reports that among the 135,190 unresolved asbestos claims, 18,520 have been settled but not fully paid (Table 3), more than twice as many claimants (38,953) filed POCs for the October bar date asserting that they have settled but unpaid claims. There is relatively little difference in Grace’s aggregate liability to the 38,953 reportedly-settled claims depending up whether all or half are treated as pre-petition liquidated claims, so the question has little significance for estimation of Grace’s overall liability for asbestos bodily injury claims. This issue is examined further in Appendix A.

Our primary forecast of liability for pending claims, presented in Section 6, assumes 18,520 pending liquidated claims, as reported in Grace’s historic database.

Finally, some claims identified as pending in Grace’s pre-petition database are likely to have been abandoned by claimants, without being entered as dismissed in Grace’s claims database. These must be excluded in estimating Grace’s liability for pending claims. In Section 6.1.4, I discuss adjustments to our analyses to reflect a reduction for abandoned claims.

4.3.2. Payment Rates--The Percentage of Grace Claims That Would Be Compensated

As I discuss above and in later sections of this report, we reduce the count of pending Grace claims by eliminating claims that have no apparent disease (Section 6.1.3), that have already been settled though unpaid (Section 6.1.3) or that have been abandoned (Section 6.1.4). Among the remaining pending claims, not all will receive payment. This section discusses this second key estimation parameter, the forecast payment rates.

We know Grace’s historic payment rates from its claims data (among resolved claims for each disease, the percent that was closed with payment), but we expect that after April 2, 2001 Grace would pay fewer claims than this historic rate, both because of broad changes in asbestos litigation and also because Grace now represents that it might have changed its litigation strategies.

Prior to its bankruptcy, Grace made payments in a very high percent of asbestos claims that it resolved. Among the 14,127 claims that Grace resolved in 2001, fewer than one in twenty was resolved without payment (Table 4). The percent of claims closed by payment was modestly lower during the five prior years.

come to reject a greater number of nonmalignant claims, particularly among claims pending on the petition date, an effect that we forecast by estimating a lower payment percent for nonmalignant claims.

We expect that instead of making payments in over 90 percent of resolved claims (Grace's historic payment rates), Grace would likely pay lower percentages of pending and future claims. Because these events occurred after Grace's bankruptcy petition, we cannot simply calculate how much payment rates might fall. We use three alternative sets of estimates of payment rates--*historic, reduced, and lowest* payment rate assumptions--that bound the likely range in which Grace's actual payment rates might fall.

The *historic* rates are simply Grace's payment rates during 2000 and 2001. These set an upper bound of Grace's likely liability costs for asbestos claims, but we expect that now Grace will likely reject more claims than it had historically. We discuss forecasts using Grace's *historic* payment rates in our sensitivity analyses, Section 7 of the report.

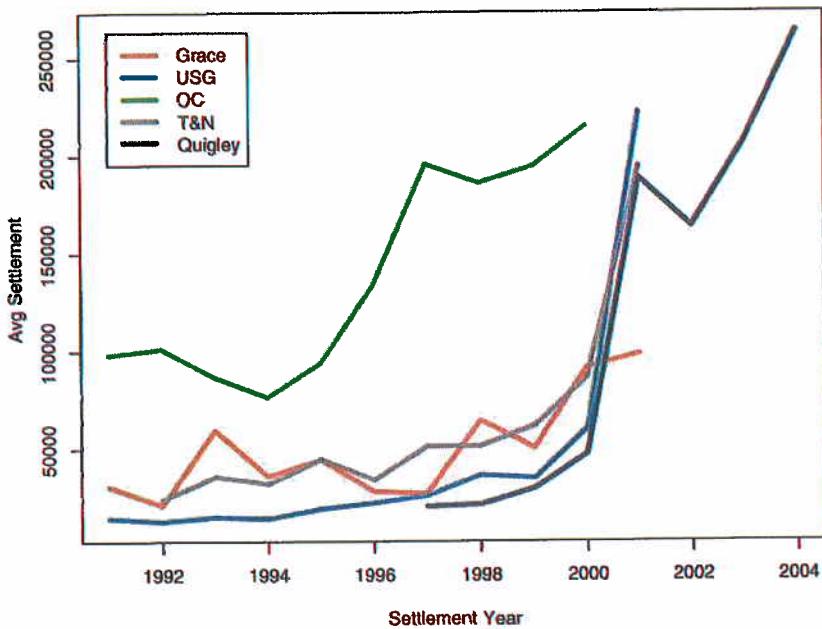
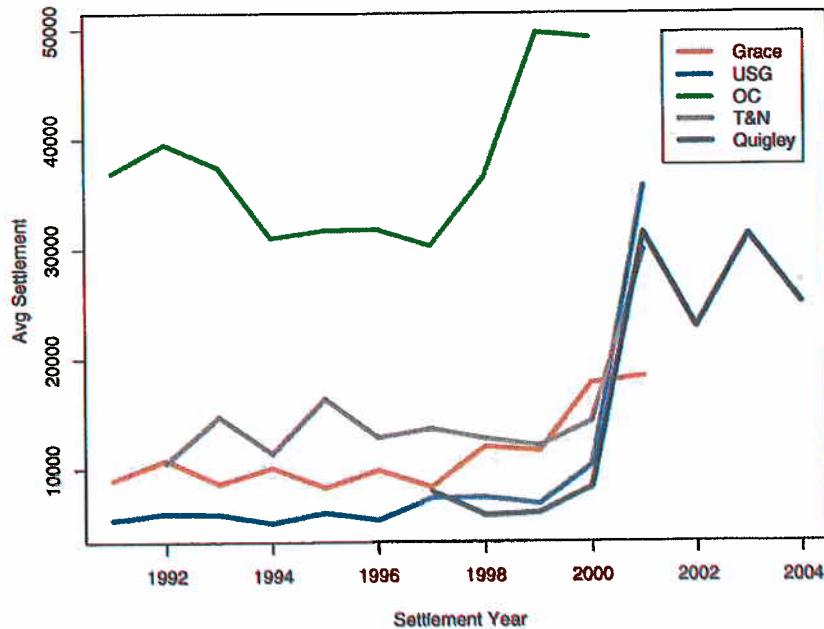
As our estimate for *lowest* payment rates, we assume that after April 2, 2001, Grace would eliminate from payment 40 percent of nonmalignant claims that it would have paid in the past and 30 percent of cancer claims that it would have paid. To derive these alternative low rates we first start with Grace's payment rates during 2000-01 (i.e., payment rates used in the high rate alternative) and then eliminate another 30 percent of cancer claims and 40 percent of nonmalignant claims that would have been paid using Grace's historic payment rates. By using these two steps of eliminating claims, we assume that Grace would make payments in only 64 to 68 percent of cancer claims and 58 percent of nonmalignant claims.

The *lowest* payment rate assumptions are conservative and likely overestimate the number of claims that Grace could resolve without payment, particularly among cancer claims (Table 8). I used these 30 and 40 percent assumptions for my recent forecasts of asbestos liabilities for Armstrong and USG. But payment rates for Armstrong and USG would fall for reasons that do not apply to Grace. Both these defendants were members of the defendant consortium the Center for Claims Resolution (CCR), whose strategy of settling claims on behalf of all CCR members had somewhat inflated payment rates among its members,¹⁵ suggesting that payment rates for Armstrong and USG would fall sharply after they left CCR. Grace was not a CCR member, would not have had a post-CCR adjustment to its payment rates, and, therefore, would not likely have seen as sharp drops in payment rates as we expect for these former CCR members.

To reflect these differences between the expected experience of Grace and CCR members USG and Armstrong, we use a third, more likely assumption, a *reduced* payment rate assumption, that assumes future payment rates for Grace half-way between the high and low payment rate assumptions.

Table 8 shows the estimated Grace forecast payment rates for the *historic, reduced* and *lowest* rate

15. By their mutual agreement, each CCR member would make payments for settled claims if it had been named in the claimant's law suit so long as the claimant could show exposure to products of at least one CCR member and had evidence of an asbestos-related disease. Because of this agreement, the CCR did not insist on evidence of exposure by each member named in a law suit, but rather paid a claim if CCR determined that any one of its members had liability. Even though under this CCR arrangement each member likely contributed settlements for some claims that it would have avoided paying as a stand alone defendant, CCR members recognized that their asbestos liabilities were far lower under the CCR arrangement than if they had been standing alone. This arrangement dissolved with the CCR's dissolution in January 2001. Now standing alone after the CCR's dissolution, each former member had to assess whether or not there was some likelihood that claims could show exposure to its own products, assessments that would likely reduce the percent of claims that each former CCR member now closed with payment. But these changes do not apply to Grace, who was not a CCR member.

Figure 3: Trends in Mesothelioma Settlement Amounts**Figure 4: Trends in Lung Cancer Settlement Amounts**

We made a second use of this transition matrix. We assume, first, that diseases in Grace's database for pending claims primarily represent plaintiffs' allegations rather than Grace's own confirmation of disease and, second, that after further review Grace would reclassify some claims with alleged disease. We use the transition matrix in Table 20 to estimate how these alleged diseases among all pending claims will likely change to the distributions of diseases that would eventually be determined by Grace, the bases for their resolutions of those claims. Because Table 20 primarily compared plaintiffs' disease allegations (the rows are categories in Grace's database) to the diseases confirmed by the Manville Trust (the columns), the table is an example about how plaintiffs' allegations differ from defendants' conclusions about disease. By using the transformation matrix in Table 20 we can estimate how defendants such as Grace would categorize diseases among pending Grace claims after review of the claims. These provide more appropriate bases for forecasting Grace's liabilities than use of disease categories that are derived primarily from plaintiffs' allegations.

Table 21: Disease Distributions After Imputation for Pending Claims and Elimination of Stale Claims

Description	Distribution of Claims					Total
	Meso	Lung	OthCan	Nonmal	None	
Number						
Resolved	4,104	7,444	2,754	166,767	12,399	193,468
Liquidated	139	466	215	17,700	0	18,520
Unresolved	2,885	5,346	1,325	93,365	6,329	109,250
Total	7,128	13,256	4,294	277,832	18,728	321,238
Percent						
Resolved	2.1%	3.8%	1.4%	86.2%	6.4%	100.0%
Liquidated	.8	2.5	1.2	95.6	.0	100.0
Unresolved	2.6	4.9	1.2	85.5	5.8	100.0
Total	2.2	4.1	1.3	86.5	5.8	100.0

Table 21 shows our estimate of the number of active, pending (and unliquidated) claims in each disease category after imputation of unspecified disease claims and use of the Manville matrix to transform allegations to confirmed disease categories. We estimate that Grace will never determine the specific diseases for 6,329 pending claims and will resolve those claims without payment. We show these claims under the "None" column to reflect that they would be rejected without determinations of disease.

6.1.5. Calculation of Indemnity for Pending Claims

In the next sections I describe our forecast for the 102,921 pending asbestos claims against Grace that have not been liquidated (there are 18,520 liquidated claims according to Grace's database), that are not claims that we assume to be inactive stale claims (7,420 claims) and that are not claims that we assume will lack an asbestos-related disease (6,329 claims). Table 22 shows these three steps for winnowing down the number of pending claims that we forecast Grace would have to consider for payment. In response to a bar date in this case approximately 38,953 claimants say they have liquidated, unpaid claims. If this is correct, we would forecast that Grace would face approximately 82,488 pending, unliquidated claims. However, following standard forecasting practices we base our forecast on Grace's historic asbestos claims database, rather than on the problematic data generated by the PIQ and POC processes in this case.

Table 22: Estimated Number of Pending, Unliquidated, Active, Asbestos-Disease Claims

Pending Claim Category	Historical Database	Expected Responses
Total Pending Claims	135,190	135,190
Liquidated Claims	-18,520	-38,953
Inactive, Stale Claims	-7,420	-7,420
No-disease Claims	-6,329	-6,329
Total	102,921	82,488

Accepting values for the 18,520 liquidated claims in the Grace database, Grace has a liability of \$62.5 million for these claims (2001 dollars).

6.1.5.1. Forecasts of Grace's Payment Rates

As I discussed in Section 4.3.2 and Section 4.3.3, we use two payment parameters to forecast how much Grace would have to pay to resolve these claims: (1) *payment rate*--the percents of claims in each disease category that Grace will resolve with payment and (2) *average settlement*--amounts that Grace would pay to claims in each disease category when it makes a payment (i.e., the average excluding claims closed without payment).

As with all asbestos defendants, Grace resolved some asbestos claims without payment, from 4 to 8 percent (varying among disease types) during 2000 and 2001. We use these past rates for one of our three alternative payment rate assumptions, *historic* payment rates. We use this alternative primarily to show what Grace's liability would be if we were to assume that its past experience would continue. However, for the reasons described in Section 4.3.2, we assume that Grace's *payment rates* would have dropped sharply and abruptly after April 2, 2001 had Grace not filed for bankruptcy protection and that much greater percentages of claims would be resolved without payment. We use two alternative estimates of how much payment rates might fall. Our *lowest* payment rate assumption follows assumptions of our liability analyses for the two former CCR members Armstrong and USG. The low payment assumption is that instead of making payments in over 90 percent of resolved claims (Grace's historic payment rates), Grace would make payments to only 64 to 68 percent of cancer claims and 58 percent of nonmalignant claims (Table 23). These forecast assumptions are taken from our earlier liability forecasts for former members of the CCR and reflect our expectations about changes in how former CCR members would review and settle claims after leaving CCR: that because of a CCR policy that members contribute to settlements in every case where named in a law suit, we would see particularly sharp drops in their payment rates after leaving CCR (Section 4.3.2). Because Grace had not been a CCR member so that its past claim filings and payment rates had not been inflated by CCR policies, we expect that it would not be able to achieve as sharp drops in its payment rates among cancer claims as we forecast for CCR members. Like our *historic* payment rate assumption, our *lowest* payment rate assumption is a lower bound estimate (particularly among future claims where we forecasts reduced filings with a drop off in poorer quality claims) rather than a forecast that we view as likely. To reflect the likely differing changes in payment rates between Grace and the former CCR members, we derived our third *reduced* payment rate assumption. This model uses rates that are midway between Grace's *historic* rates and those of our *lowest* payment rate forecast. As shown in Table 23, this assumption is that Grace would pay 78 to 82 percent of cancer claims and 58 percent of nonmalignant claims. We regard forecasts based on the *reduced* payment rates as more likely. We do not expect that Grace's liabilities would be great as those forecast using its *historic* payment rates or as low as liabilities forecast using the sharply reduced

lowest payment rates among cancer claims, but would be near liabilities forecast using our reduced payment rates. In resolving pending nonmalignant claims, we assume that Grace could achieve far more success in closing those claims without payment. Therefore, we assume for both our *reduced* and *lowest* forecast models that Grace could close 42 percent of nonmalignant claims without payment, compared to its historic experience of rejecting only 4 percent.

Table 23: Payment Percentages for Grace

Payment Rate Definition	Payment Percentages			
	Meso	Lung	OthCan	Nonmal
Historic	92.1%	95.3%	96.7%	96.3%
Reduced	78.3	81.0	82.2	57.8
Lowest	64.5	66.7	67.7	57.8

6.1.5.2. Forecasts of Grace Settlement Amounts

For all of the reasons discussed in Section 4.3 and Section 4.4 above, we forecast that Grace's *average settlement* values would have continued to increase after April 2001 as they had been increasing in the past, either at the same rates that Grace's settlement values had increased since 1997 (short-term trend) or since 1990 (regressions results for Long-Term Trend) or else at one of three slowly increasing rates that would leave Grace's settlement values in 2006 equal to amounts paid in 2001 among the three other comparable asbestos defendants: USG, Quigley, and T&N.

Each of these alternatives forecast that *average settlement* values would increase gradually over five years from 2002 through 2006. Because we forecast that Grace would have settled all pending claims between 2001 and 2003, we do not use the increased 2006 values as estimates of what Grace would pay pending claims.²⁵ Instead we use Grace's 2002 *average settlement* values for each of our five alternative value models shown in Table 13 through Table 15, values that in each alternative model are only modestly greater than Grace's settlement averages for 2000 and 2001 (Table 24).

25. We assume that one-third of pending claims would be settled and paid in each year 2001, 2002 and 2003, essentially equivalent to assuming that all pending claims would settle at the *average settlement* value for 2002.

Table 24: 2002 Settlement Values Forecast

Average Settlement	Settlement Values			
	Meso	Lung	OthCan	Nonmal
2000-2001 Average	\$93,640	\$17,912	\$9,891	\$3,372
Long Term Grace	\$108,918	\$18,688	\$11,088	\$3,018
Short Term Grace	107,964	19,952	10,784	3,548
Quigley	107,651	20,041	10,146	3,681
T&N	108,331	19,836	10,261	3,680
USG	111,260	20,553	10,372	3,678

Note: Payment amounts are expressed in 2001 dollars.

We forecast that pending mesothelioma claimants who receive settlements would be paid 15 to 19 percent more in settlement than the 2000-2001 pre-petition settlements for such claims, but that pending nonmalignant claims who receive settlements would be paid at most 9 percent more and possibly 10 percent less than nonmalignant claims that settled in 2000-2001.²⁶

In contrast to our forecast of five-year gradual increases in *average settlement* values, we forecast that Grace's *payment rates* would drop immediately and sharply in 2002 (Table 23) when it would reject without payment 3 to 6 times as many cancer claims and 11 times as many nonmalignant claims as it had before its bankruptcy.

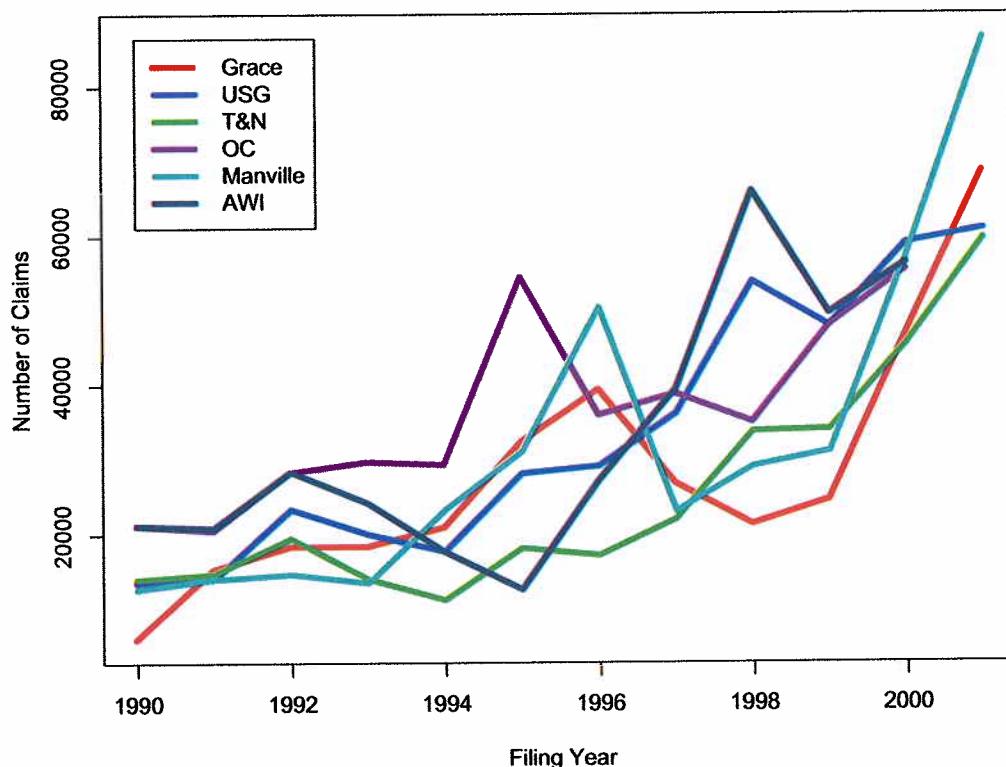
Table 25 shows our forecasts of both settlement parameters for pending claims, *average settlements* and *payment rates* by disease, for ten combinations of two alternative payment rate assumptions and five alternative settlement average assumptions. The table also shows Grace's *historic* payment rates and settlement averages for each disease.

Table 25: Payment Parameters for Pending Claims

Payment Rates	Average Settlement	Payment Rates				2002 Payment Amount			
		Meso	Lung	OthCan	Nonmal	Meso	Lung	OthCan	Nonmal
Historic	Historic	92.1%	95.3%	96.7%	96.3%	\$93,640	\$17,912	\$9,891	\$3,372
Reduced	Long Term Grace	78.3%	81.0%	82.2%	57.8%	\$108,918	\$18,688	\$11,088	\$3,018
Reduced	Short Term Grace	78.3	81.0	82.2	57.8	107,964	19,952	10,784	3,548
Reduced	Quigley	78.3	81.0	82.2	57.8	107,651	20,041	10,146	3,681
Reduced	T&N	78.3	81.0	82.2	57.8	108,331	19,836	10,261	3,680
Reduced	USG	78.3	81.0	82.2	57.8	111,260	20,553	10,372	3,678
Lowest	Long Term Grace	64.5%	66.7%	67.7%	57.8%	\$108,918	\$18,688	\$11,088	\$3,018
Lowest	Short Term Grace	64.5	66.7	67.7	57.8	107,964	19,952	10,784	3,548
Lowest	Quigley	64.5	66.7	67.7	57.8	107,651	20,041	10,146	3,681
Lowest	T&N	64.5	66.7	67.7	57.8	108,331	19,836	10,261	3,680
Lowest	USG	64.5	66.7	67.7	57.8	111,260	20,553	10,372	3,678

Note: Payment amounts are expressed in 2001 dollars. T&N values for other cancer and nonmalignants were estimated by averaging values for Quigley and USG.

Taken together these assumptions--sharply lower payment rates and modest increase in settlement values--mean that we forecast that Grace would pay less to resolve pending claims than it had paid to resolve claims before its bankruptcy petition. Table 26 shows the size of these predicted

Figure 17: Claim Filings for Major Asbestos Defendants, 1990-2001

Note: Grace's 2001 entry based on annualizing filings. The USG and OC entries are annualized for bankruptcy year.

In this section I consider how Grace's increasing claim filing trends would have continued into the future, presenting our forecasts of future claims that would be filed after Grace's bankruptcy petition date. We forecast Grace's future claims using the standard "Nicholson" forecasting method. In making these forecasts, we look to the effects of recent changes in the litigation environment which cause us to adjust and reduce our forecast of the number of future nonmalignancy claims that would be filed against Grace (Section 6.2.4).

The number, timing and types of future claims against Grace will depend both upon the number of people in each future year who develop diseases that are asbestos-related (the incidence of diseases) and also the fraction of those people who will pursue claims against Grace (its "propensities to sue").

This section describes how the historic propensities to sue Grace for cancer are calculated and used to forecast future cancer claims. Inputs to these calculations are (1) epidemiological models of the incidence of asbestos-related cancer deaths, and (2) historic data on the number of cancer claims filed against Grace and (3) data on cancer claims filings against other defendants both before and since Grace's petition date.

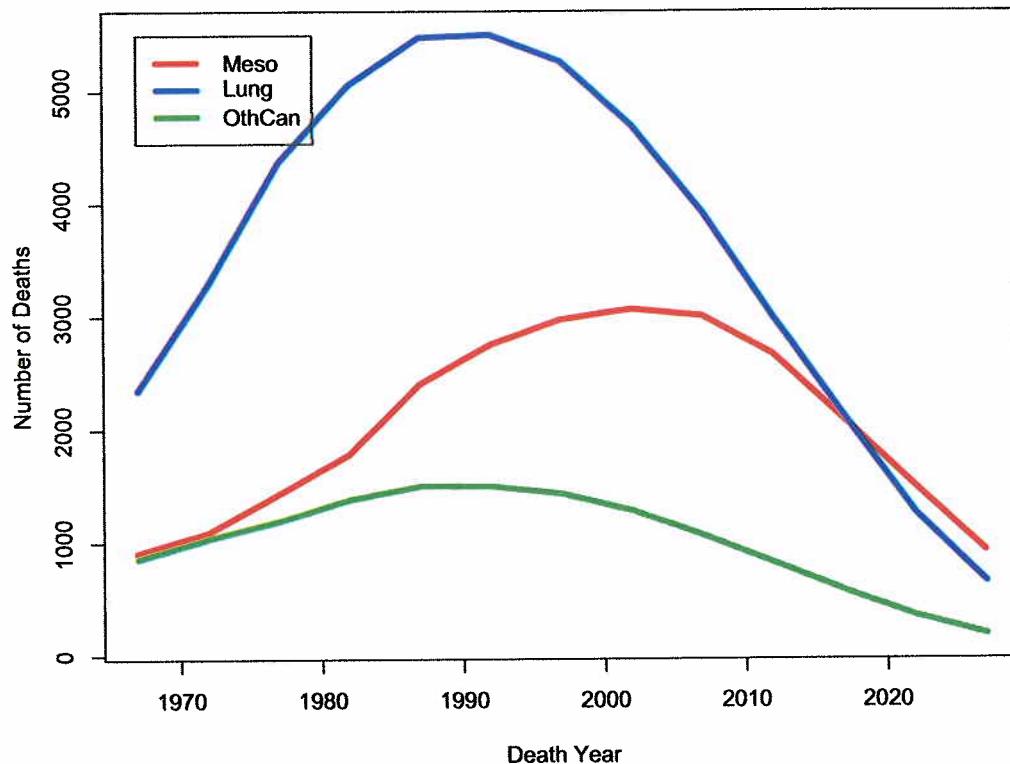
6.2.1. The Incidence of Asbestos-Related Cancers

Medical research by epidemiologists provides projections of the incidence of asbestos-related cancers. Projections differ somewhat among epidemiologists, but most agree on the relative

changes in cancer deaths over time--increasing until late in the twentieth century followed by a slow decrease in the following years. Because of this general agreement on changes over time, projections of future claims will be generally similar even when based on differing projections of incidence.

Figure 18 shows epidemiological projections of the annual number of asbestos-caused deaths between 1967 and 2027 from each of three asbestos-related cancers--mesothelioma, lung cancer and other (primarily gastro- intestinal) cancers--among workers exposed before 1980 in major asbestos-using industries.²⁷ The figure represents the results of work by Nicholson, Perkel and Selikoff (1982) which is generally recognized as the most comprehensive and reliable forecast of asbestos-related cancer deaths (Appendix Table C1). The peak year of forecast deaths differs among the three types of cancers because the latency periods, i.e., the time from first asbestos exposure to the occurrences of cancer, differ among the three diseases. Because the latency period is longest for mesothelioma, the risk of that disease increases for a longer period and the incidence of mesothelioma peaks later than for other asbestos-related cancers. The patterns of asbestos diseases among exposed workers and, therefore, the patterns of legal claims, have been changing over time with these changes in the relative incidences of each type of cancer. In past years lung cancer has been the most frequent cancer among occupationally exposed workers and the most frequently claimed cancer. However, now and in each future year approximately the same number of workers will suffer mesothelioma and lung cancer.

27. Forecasts for lung and other cancers are excess deaths, i.e., the number of additional deaths that will occur because of asbestos exposures that are in addition to cancer deaths that would otherwise have occurred without asbestos exposure. Asbestos exposure is the only known cause of mesothelioma.

Figure 18: Nicholson Cancer Projections

6.2.2. Accuracy of Epidemiological Projections

Epidemiologists' projections, like those of Nicholson, et. al., have their own uncertainties, but can be tested by comparing projections for past years with data on mesothelioma deaths in those same years collected by the National Cancer Institute's SEER (Surveillance, Epidemiology and End Results) cancer registry. The SEER program collects comprehensive data on the incidence, treatment and end results (including deaths) for all types of cancers at seventeen different sites in the United States. SEER generates cancer rates from these sites that can then be used to estimate the incidence of each type of cancer for the United States as a whole. The SEER program is highly sophisticated and recognized as the state of the art for such programs throughout the world and its results are widely used in medical research and planning.

Because SEER collects data continually, its counts provide estimates of the annual national incidence of each type of cancer over many years. SEER's annual estimates of the national incidence of mesothelioma provide the means to test epidemiological forecasts of mesothelioma deaths. Asbestos is the only known cause of mesothelioma and so epidemiologists' forecasts of asbestos-related mesothelioma deaths should tend to correspond to the annual SEER national incidence counts for all mesothelioma deaths. While the SEER national incidence measures are themselves estimates based on the sample of SEER sites that have their own uncertainties, over many years an accurate epidemiological forecast of mesothelioma deaths should track trends in the SEER estimates of actual mesothelioma deaths.

SEER collects its data from a limited number of major sites around the country (e.g. two sites are Los Angeles-Long Beach and the entire state of Iowa). It is impossible to make a random selection of such sites, but SEER has attempted to select a cross section of sites that will closely

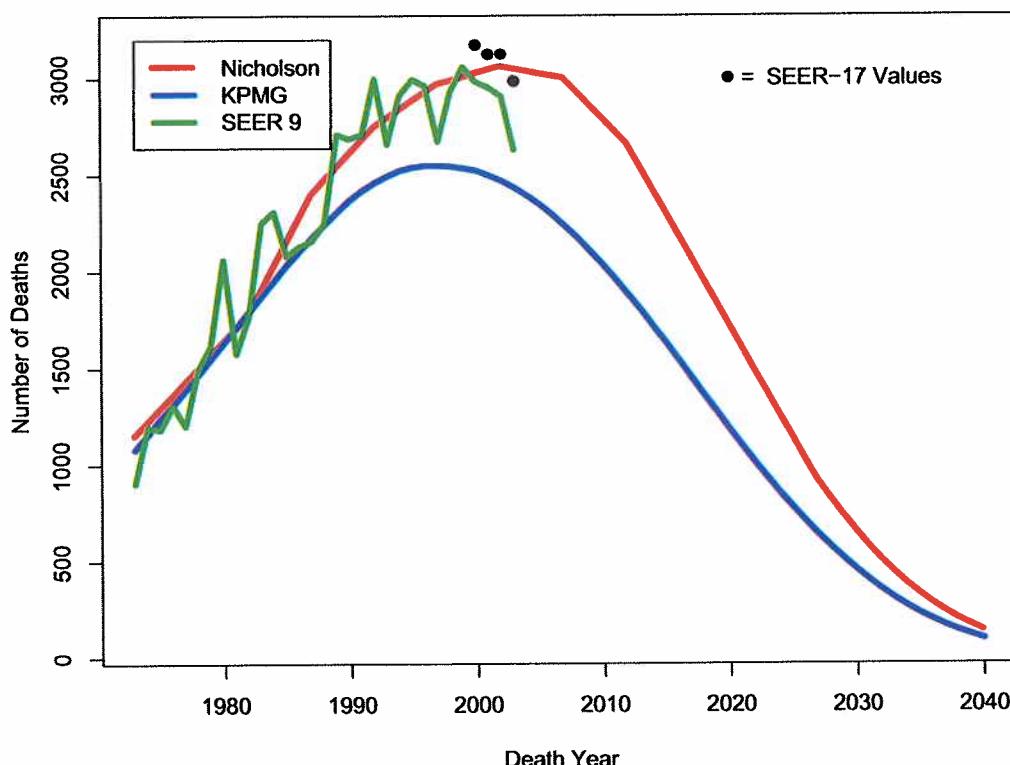
mimic key demographic characteristics of the U.S. as a whole. In recent years the SEER program has expanded its number of sites both to provide more data and better matches to the country as a whole. SEER's counts of sites went from 9 before 1992, to 13 between 1992 and 1999, and now 17 sites since 2000.

Estimates of the national incidence of cancers are enhanced because SEER provides rates of cancer broken down by key demographic variables so that national estimates can take into account differences in rates by age and other characteristics. These age rates are particularly important for estimating national incidences of mesothelioma and other diseases whose incidence is strongly related to age.

SEER's counts of 2000 to 2003 national mesothelioma deaths based on its most comprehensive 17 sites are remarkable close to Nicholson's forecasts of mesothelioma incidence (Table 28). Nicholson forecast 12,173 mesothelioma deaths for this four year period, within 233 of the SEER national counts of 12,406 mesothelioma for those years. This is less than a 2 percent difference. This correspondence supports the conclusion that Nicholson's forecasts, made almost 25 years ago, remain remarkably accurate even today.

Table 28: Comparison of Nicholson Projections with SEER-17 Site Estimates of Mesothelioma Incidence

Death Year	Nicholson Projections	SEER-17 Estimates
2000	3,024	3,172
2001	3,042	3,124
2002	3,060	3,125
2003	3,048	2,985
Total	12,173	12,406

Figure 19: Epidemiological Projections Confirmed by SEER's Mesothelioma Counts

While SEER's 9-sites provide a somewhat less comprehensive view of national cancer rates than its 17-sites, the availability of 31 years of data from these 9 sites provides an opportunity to compare the long-term correspondence between Nicholson's forecasts and the SEER data. Nicholson and his colleagues published their forecasts in 1982. Since then and through the most recent years of data, the Nicholson forecasts closely track the 9-site SEER estimates of annual mesothelioma deaths. SEER's 31-year trends are shown in Figure 19 and, as Figure 19 shows, the Nicholson et. al. forecasts correspond remarkably well to SEER's 9-site estimates of actual mesothelioma deaths up through 2000, where Nicholson is higher by only 1.4%.

Subsequently, the 9-site numbers dip considerably, but data from SEER's 17-sites show that there continues to be close correspondence between Nicholson and SEER after 2000 despite divergence between Nicholson's forecast and the 9-site SEER estimates. The difference between the 17-site and 9-site SEER estimates suggest that differences in the two SEER curves may be due to uncertainties in estimating national incidence data from SEER.

Because lung cancer and the other asbestos-related cancers have causes other than asbestos exposure, the SEER estimates of those cancer deaths will exceed and cannot be used to test the epidemiological forecasts for those other cancers. But because Nicholson's forecasts for all types of cancers are based on the same methods and the same estimates of the number of exposed workers and the extent of their asbestos exposures, the strong confirmation of Nicholson's forecast for mesothelioma provides confidence for Nicholson's epidemiological forecasts for each type of cancer.

Figure 19 also shows a second forecast of asbestos-related mesothelioma deaths made by analysts at KPMG-Peat Marwick in 1992 as part of their work as experts in the bankruptcy proceedings of

National Gypsum. Dr. Tom Vasquez and his colleagues at KPMG-Peat Marwick attempted to update the 1982 forecasts made by Nicholson, et. al., using more recent U.S. Labor Department statistics on the populations of workers in asbestos exposed industries, more recently formulated medical models of the risk of mesothelioma and lung cancer from asbestos exposure and several alternative assumptions (KPMG's annual forecasts are reproduced in Appendix Table C2). As Figure 19 illustrates, the shape of KPMG forecasts (i.e., their trends) are very similar to those made by Nicholson et. al. a decade previously and, as a result, claims forecasts that are based on the two alternative epidemiological forecasts are only slightly different.

The close correspondence between KPMG and SEER before the 1990s is not a validation of the KPMG forecast. KPMG derived its revised forecasts in part by fitting the forecasts to the SEER data through the 1980s. The curves correspond not because KPMG was forecasting mesothelioma incidence before the 1990s but because the KPMG estimates were made to fit to SEER's estimates by the KPMG researchers. Figure 19 shows that over the subsequent eight-year time period 1993 to 2000 the original Nicholson projections more closely fit the SEER data on actual mesothelioma deaths than do the KPMG forecasts. Since 2000, estimates of national mesothelioma incidence derived from the 9-site SEER fall between the Nicholson and KPMG forecasts, but national estimates derived from the SEER-17 sites more closely validate the Nicholson than the KPMG forecasts.

6.2.3. Propensities to Sue Grace

Data and forecasts of the incidence of asbestos-related diseases describe the potential for liability against Grace. As long as asbestos-related cancers occur, it is likely that some claims will be filed. We compare Grace's data on past claim filings to Nicholson's incidence forecasts for past years to see how much of this potential for asbestos cancer claims was directed against the company in the past: Among all the potential asbestos-related cancer claims in the U.S. what fraction resulted in Grace claims? We formalize these comparisons through our propensity to sue calculations shown in the next paragraph. Grace's claims data also show trends in claiming against the company, whether the propensities to sue had increased, decreased or stabilized in recent years. The historic levels and trends in propensities to sue document the past behavior by claimants and plaintiffs' lawyers in pursuing possible claims for asbestos-related cancers.

We look to this past history of claiming against Grace--past propensities to sue and trends in the propensities to sue--as well as information about claiming against other asbestos defendants to forecast future claiming against Grace. We forecast the number of claims for each type of cancer in each future year by multiplying the number of deaths projected by Nicholson for that year times our forecast of the propensity to sue for that cancer in that year. The calculations that are used first to derive propensities to sue and second to forecast future claims based on these propensities to sue are stated below.

Calculation of Propensity to Sue:

$$\text{Number of Claims} \div \text{Incidence} = \text{Propensity to Sue}$$

Forecasting Future Claims from Propensity to Sue:

$$\text{Propensity to Sue} \times \text{Incidence in Future Year} = \text{Projected Claims in Future Year}$$

We base our forecast of future propensities to sue Grace primarily on the number of cancer claims filed in the past against Grace and its trends in past annual filings. Table 29 shows the annual

number of asbestos bodily injury claims filed against Grace for each type of asbestos-related disease after the imputation of unspecified disease claims, as described in Section 6.1.4. Claim filings against Grace continued at high levels until Grace filed for bankruptcy protection in April 2001. It received over 33,000 claims in the first quarter of 2001. The 2001 filings during one quarter cannot be compared meaningfully to the annual filings for prior years. To permit meaningful comparisons, Table 29 also shows annualized filings for 2001, using Grace's claim filings during 1999 through March 2001 to fill in the last three quarters of 2001 filings. Overall, Grace saw a sharp increase in annual claim filings over the decade of the 1990s. This trend too was shared with other major asbestos defendants.

Table 29: Number of Filings Against Grace, By Filing Year and Disease (After Reallocation)

Filing Year	Number of Filings					
	Meso	Lung	OthCan	Nonmal	None	Total
1980-	2	0	1	3	0	6
1981	1	0	1	10	0	12
1982	5	0	3	23	2	33
1983	9	6	4	164	88	271
1984	12	12	7	311	43	385
1985	34	33	13	531	3	614
1986	68	69	40	1,516	32	1,725
1987	99	181	53	2,327	392	3,052
1988	131	168	95	5,377	489	6,260
1989	86	173	57	4,201	370	4,887
1990	152	315	126	5,047	350	5,990
1991	322	499	133	13,085	1,293	15,331
1992	437	923	296	15,574	1,128	18,358
1993	346	884	327	15,340	1,457	18,355
1994	571	1,041	339	18,030	984	20,966
1995	594	1,367	527	29,219	678	32,386
1996	652	1,574	550	34,454	2,176	39,407
1997	634	1,238	361	23,651	914	26,797
1998	574	887	292	18,302	1,258	21,313
1999	675	1,114	313	20,295	2,180	24,576
2000	1,159	1,690	463	40,079	3,471	46,861
2001 (1/4)	566	1,082	293	30,292	1,420	33,653
2001 (Ann)	1,366	2,377	649	60,514	3,777	68,683
Total	7,129	13,256	4,294	277,831	18,728	321,238

Notes: Entries for 2001 (in red) are filings only through the first quarter before Grace's April 1, 2001 petition. Entries for 2000(Ann) (in green) are annualized filings using filing rates over the 27 month period January 1999-April 1, 2001, for the last three quarters of 2001

Figure 20 provides graphic representations of these increasing trends in Grace filings for each of the three types cancers. To provide the most meaningful information about Grace's filings that closely preceded its petition, we average filings over the period January 1999 to April 2001 to obtain annualized rates for 2001. Note that the instability in claim filings between 1996 and 1998, the sharp increases in 1996 and declines in 1997-1998 are results of the moratoria agreement that Grace negotiated with major plaintiff's law firms.